AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (original) A cryogen pressure vessel assembly for a superconducting magnet, the cryogen pressure vessel assembly comprising:

an inner former having a plurality of superconducting magnet coils wound thereon, said inner former including a first pair of end walls extending therefrom;

an outer former having a plurality of bucking coils wound thereon, said outer former extending between said first pair of end walls and including a second pair of end walls extending therefrom;

an outer shell extending between said second pair of end walls; and

wherein said inner former, said outer former, said first pair of end walls, said second pair of end walls, and said outer shell form a fluid boundary for a cryogen.

2. (original) The cryogen pressure vessel assembly of claim 1, wherein said inner former further includes:

a first plurality of coil former walls extending radially outward about a perimeter of said first shell, said first plurality of coil former walls forming a plurality of pockets for said plurality of superconducting magnet coils.

3. (original) The cryogen pressure vessel assembly of claim 2, further comprising:

a second plurality of coil former walls extending radially outward about a perimeter of said second shell, said second plurality of coil former walls forming a plurality of pockets for said plurality of bucking coils.

4. (original) The cryogen pressure vessel assembly of claim 2, said cryogen pressure vessel assembly further comprising:

a pressure face formed on at least one coil former wall in said first plurality of coil former walls;

a radial slot disposed in said pressure face, said radial slot for receiving wires entering and exiting a superconducting magnet coil; and

a plurality of wire clamps positioned in said radial slot, each wire clamp in said plurality of wire clamps including:

a front face extending coplanar with said pressure face,

a rear face opposite said front face, said rear face contacting a back surface of said radial slot, and

a recess formed in said rear face, said recess forming a channel for passage of said wires entering and exiting said superconducting magnet coil.

5. (original) The cryogen pressure vessel assembly of claim 4, wherein each wire clamp in said plurality of wire clamps further includes:

first and second arcuate slots in communication with said recess, said first and second arcuate slots being sized to accept a single wire forming a portion of said superconducting magnet coil.

6. (original) The cryogen pressure vessel assembly of claim 5, wherein each wire clamp in said plurality of wire clamps further includes:

a chamfer extending between said recess and said first and second arcuate slots.

7. (original) The cryogen pressure vessel assembly of claim 4, further comprising,

alignment pins extending along said radial slot from said first shell, said plurality of wire clamps being disposed on said alignment pins.

8-9. (canceled)

10. (currently amended) A cryogen pressure vessel assembly for a superconducting magnet, the cryogen pressure vessel assembly comprising:

a first cylindrical shell forming a first portion of a fluid boundary for a cryogen;

a first pair of coil former walls extending radially outward about a perimeter of said first cylindrical shell, said first pair of coil former walls and said first cylindrical shell forming a pocket;

a superconducting magnet coil disposed in said pocket;

a first pair of end walls extending radially outward about said perimeter of said first cylindrical shell, said first pair of coil former walls and said superconducting magnet coil being positioned between said first pair of end walls;

a second cylindrical shell coaxial to said first cylindrical shell and extending between said first pair of end walls, said first pair of end walls and said second cylindrical shell forming a second portion of said fluid boundary for said cryogen;

~~The cryogen pressure vessel assembly of claim 9, further comprising:~~

a second pair of coil former walls extending radially outward about a perimeter of said second cylindrical shell, said second pair of coil former walls forming at least one pocket; and

a bucking coil disposed in said at least one pocket.

11. (original) The cryogen pressure vessel assembly of claim 10, further comprising:

a second pair of end walls extending radially outward about a perimeter of said second cylindrical shell; and

an third cylindrical shell coaxial to said first cylindrical shell and extending between said second pair of end walls, said second pair of end walls and said third cylindrical shell forming a third portion of said fluid boundary for said cryogen.

12. (currently amended) The cryogen pressure vessel assembly of claim [[8]] 10, said cryogen pressure vessel assembly further comprising:

a pressure face formed on at least one coil former wall in said first pair of coil former walls, said pressure face contacting said superconducting magnet coil;

a radial slot disposed in said pressure face, said radial slot for receiving wires entering and exiting said superconducting magnet coil; and

a plurality of wire clamps positioned in said radial slot, each wire clamp in said plurality of wire clamps including:

a front face extending coplanar with said pressure face,

a rear face opposite said front face, said rear face contacting a back surface of said radial slot, and

a recess formed in said rear face, said recess forming a channel for passage of said wires entering and exiting said superconducting magnet coil.

13. (original) The cryogen pressure vessel assembly of claim 12, wherein each wire clamp in said plurality of wire clamps further includes:

first and second arcuate slots in communication with said recess, said first and second arcuate slots being sized to accept a single wire forming a portion of said superconducting magnet coil.

14. (original) The cryogen pressure vessel assembly of claim 13, wherein each wire clamp in said plurality of wire clamps further includes:

a chamfer extending between said recess and said first and second arcuate slots.

15. (original) The cryogen pressure vessel assembly of claim 12, further comprising,

alignment pins extending along said radial slot from said first cylindrical shell, said plurality of wire clamps being disposed on said alignment pins.

16. (original) A cryogen pressure vessel assembly for a superconducting magnet, the cryogen pressure vessel comprising:

a coil former;

a coil disposed on said coil former;

a pressure face formed on said coil former, said pressure face contacting said coil;

a radial slot disposed in said pressure face, said radial slot for receiving wires entering and exiting said coil; and

a plurality of wire clamps positioned in said radial slot, each wire clamp in said plurality of wire clamps including:

a front face extending coplanar with said pressure face,

a rear face opposite said front face, said rear face contacting a back surface of said radial slot, and

a recess formed in said rear face, said recess forming a channel for passage of said wires entering and exiting said coil.

17. (original) The cryogen pressure vessel assembly of claim 16, wherein each wire clamp in said plurality of wire clamps further includes:

first and second arcuate slots in communication with said recess, said first and second arcuate slots being sized to accept a single wire forming a portion of said coil.

18. (original) The cryogen pressure vessel assembly of claim 17, wherein each wire clamp in said plurality of wire clamps further includes:

a chamfer extending between said recess and said first and second arcuate slots.

19. (original) The cryogen pressure vessel assembly of claim 16, further comprising,

alignment pins extending along said radial slot, said plurality of wire clamps being disposed on said alignment pins.

20. (original) A method of assembling a cryogen pressure vessel assembly, the method comprising:

winding a plurality of superconducting magnet coils around a first cylindrical shell, said first cylindrical shell including a first pair of end walls extending radially outward about a perimeter of said first cylindrical shell;

winding a plurality of bucking coils around a second cylindrical shell;

inserting said first cylindrical shell within said second cylindrical shell;

joining a first seam formed between said second cylindrical shell and outside diameters of said first pair of end walls.

21. (currently amended) The method of claim [[19]] 20, wherein said second cylindrical shell includes a second pair of end walls extending radially outward about a perimeter of said second cylindrical shell, said method further comprising:

inserting said second cylindrical shell within a third cylindrical shell; and

joining a second seam formed between said third cylindrical shell and outside diameters of said second pair of end walls.

22. (original) The method of claim 21, wherein said joining said first seam and said joining said second seam each include welding said seams.

23. (original) A superconducting magnet assembly comprising:

an outer vacuum vessel defining an inner bore; and

a cryogen pressure vessel disposed within said outer vacuum vessel, said cryogen pressure vessel comprising:

an inner former having a plurality of superconducting magnet coils wound thereon, said inner former including a first pair of end walls extending therefrom,

an outer former having a plurality of bucking coils wound thereon, said outer former extending between said first pair of end walls and including a second pair of end walls extending therefrom,

an outer shell extending between said second pair of end walls, and

wherein said inner former, said outer former, said first pair of end walls, said second pair of end walls, and said outer shell form a fluid boundary to retain a cryogen within said cryogen pressure vessel.

24. (original) The cryogen pressure vessel assembly of claim 23, said cryogen pressure vessel assembly further comprising:

a pressure face formed on said inner former, said pressure face contacting said superconducting magnet coil;

a radial slot disposed in said pressure face, said radial slot for receiving wires entering and exiting a superconducting magnet coil; and

a plurality of wire clamps positioned in said radial slot, each wire clamp in said plurality of wire clamps including:

a front face extending coplanar with said pressure face,

a rear face opposite said front face, said rear face contacting a back surface of said radial slot, and

a recess formed in said rear face, said recess forming a channel for passage of said wires entering and exiting said superconducting magnet coil.

25. (original) The cryogen pressure vessel assembly of claim 24, wherein each wire clamp in said plurality of wire clamps further includes:

first and second arcuate slots in communication with said recess, said first and second arcuate slots being sized to accept a single wire forming a portion of said superconducting magnet coil.

26. (original) A magnetic resonance imaging system comprising:

a superconducting magnet assembly including:

an outer vacuum vessel defining an inner bore,

a cryogen pressure vessel disposed within said outer vacuum vessel, said cryogen pressure vessel comprising:

an inner former having a plurality of superconducting magnet coils wound thereon, said inner former including a first pair of end walls extending therefrom,

an outer former having a plurality of bucking coils wound thereon, said outer former extending between said first pair of end walls and including a second pair of end walls extending therefrom,

an outer shell extending between said second pair of end walls, and

wherein said inner former, said outer former, said first pair of end walls, said second pair of end walls, and said outer shell form a fluid boundary to retain a cryogen within said cryogen pressure vessel; and

a gradient magnetic field coil assembly disposed in said inner bore.

27. (original) The magnetic resonance imaging system of claim 26, wherein said cryogen pressure vessel assembly further includes:

a pressure face formed on said inner former, said pressure face contacting said superconducting magnet coil;

a radial slot disposed in said pressure face, said radial slot for receiving wires entering and exiting a superconducting magnet coil; and

a plurality of wire clamps positioned in said radial slot, each wire clamp in said plurality of wire clamps including:

a front face extending coplanar with said pressure face,

a rear face opposite said front face, said rear face contacting a back surface of said radial slot, and

a recess formed in said rear face, said recess forming a channel for passage of said wires entering and exiting said superconducting magnet coil.

28. (original) The magnetic resonance imaging system of claim 27, wherein each wire clamp in said plurality of wire clamps further includes:

first and second arcuate slots in communication with said recess, said first and second arcuate slots being sized to accept a single wire forming a portion of said superconducting magnet coil.

29. (original) A magnetic resonance imaging system comprising:

a superconducting magnet assembly including:

an outer vacuum vessel defining an inner bore,

a cryogen pressure vessel disposed within said outer vacuum vessel, said cryogen pressure vessel comprising:

a coil former,

a coil disposed on said coil former,

a pressure face formed on said coil former, said pressure face contacting said coil,

a radial slot disposed in said pressure face, said radial slot for receiving wires entering and exiting said coil, and

a plurality of wire clamps positioned in said radial slot, each wire clamp in said plurality of wire clamps including:

a front face extending coplanar with said pressure face,

a rear face opposite said front face, said rear face contacting a back surface of said radial slot, and

a recess formed in said rear face, said recess forming a channel for passage of said wires entering and exiting said coil; and

a gradient magnetic field coil assembly disposed in said inner bore.

30. (original) The magnetic resonance imaging system of claim 29, wherein each wire clamp in said plurality of wire clamps further includes:

first and second arcuate slots in communication with said recess, said first and second arcuate slots being sized to accept a single wire forming a portion of said coil.

31. (original) The magnetic resonance imaging system of claim 30, wherein each wire clamp in said plurality of wire clamps further includes:

a chamfer extending between said recess and said first and second arcuate slots.

32. (original) The magnetic resonance imaging system of claim 31, further comprising,

alignment pins extending along said radial slot, said plurality of wire clamps being disposed on said alignment pins.